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POST-WAR REGIONAL PLANNING — THE FRENCH
SILICON VALLEY

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the ROYAL SIGNALS AND RADAR ESTABLISHMENT

Memorandum 4282

TITLE: POST-WAR REGIONAL PLANNING - THE FRENCH SILICON VALLEY

AUTHOR: S L Holeman (Wolverhampton Polytechnic)

DATE: August 1989

SUMMARY

This dissertation is a study of French regional planning policies with specific reference to the Rhône-Alpes region. In particular it studies Grenoble and her science-based industries and research laboratories. It is a critical analysis of the development of this region and of the factors behind its emergence as the French 'silicon valley'.

Ever closer ties to Europe with increasing pressure for Anglo-French collaboration plus the impending impact of 1992 lead to the need for a closer awareness of French technical strategy and history. RSRE has significant links with the Grenoble area, and this memorandum has been made available to provide useful and relevant background.

The memorandum was originally written as a dissertation forming part of a degree in European studies at Wolverhampton Polytechnic. The author spent a year at Grenoble University during 1987/88.

Summary by B R Holeman, RSRE

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PREFACE

Regional planning and decentralisation from Paris have been major preoccupations, to varying degrees, of successive post-war governments. The first chapter in this dissertation looks at the reasons why regional planning has been considered so important. It explains the various policies, analysing both the importance attached to them throughout the post-war period and their effects on the regions. The Rhône-Alpes is considered to be one of the more successful of the french regions, to the extent that it is sometimes referred to as the "French Silicon Valley". Chapter Two therefore, concentrates on this region, the problems apparent there after the War, the advances made and the extent to which regional planning contributed to those advances. Chapter Three looks at Grenoble, a city within the Rhône-Alpes region which saw phenomenal growth and development during the post-war "boom" period of the fifties and sixties, particularly in the area of scientific research and development. In addition to attempting to analyse and explain this growth, the chapter also looks at the effects of the recent recession on Grenoble, the support given by the government to this city, through regional policy, and Grenoble's position today. Finally, the Fourth Chapter contains two case studies, detailing the most influential aspects of the City of Grenoble - her University and linked with this, or even because of it, her role as one of the most successful "Science Parks" in France.

CHAPTER ONE

THE DEVELOPMENT OF REGIONAL PLANNING IN POST-WAR FRANCE.

Regional Policy is "a voluntary policy to transform the territory and the conditions of regional life of the french people"¹. Its ambitions are great as it is aimed at a wide variety of levels in society; for example, local and limited problems, such as the construction of a superhighway, decentralisation of a large factory, the creation of an administrative service in a large city and the development of a town plan; more generalized problems such as the redevelopment of an entire natural region (irrigation and change of crops in Languedoc), or of an administrative region (industrialization of Brittany); finally general perspectives for the organisation of the national territory (reduction of the preponderant role of Paris, the creation of metropolises to counterbalance the power of Paris).

REGIONAL PLANNING AND POLICIES - 1945 to 1972.

Before the Second World War the French provinces were "unparalleled in Europe for lethargy and bourgeois narrowness of spirit"². In no other country was there such a difference between the capital and the rest. Provincial became a word of contempt in Paris and the capital took the best of everything - the intellectual life, the talent and initiative, the power of decision on even the smallest matters of local government, even industry settled in Paris or in a few favoured regions in north-eastern France. In addition there was also inequality between the East and the West. A line drawn from Paris to the Marseille region would divide France into a prosperous eastern half, including Lille, the Rhône-Alpes and Lyon, and the western half, known as 'le désert français' a widely-used term first adopted by Professor Gravier, whose influence and work in this area will be explained later. The principle source of employment in the western half of France has been the agricultural sector, typified by small-scale, inefficient farms heavily reliant on a narrow range of products. Slowly these have given way to larger, more mechanized, more efficient units requiring a smaller workforce. At the same time, young people, perhaps influenced by both periods away from the region due to Higher Education or compulsory Military Service and by the lack of modern local infrastructure and facilities, have either left the countryside for towns within the region or left the region completely to live elsewhere, especially in Paris. The remaining available labour in the area, thus tended to be the older, less well-educated and less highly-trained which gave few incentives to prospective employers. The inevitable tendency was for the problems in these regions to worsen while the excessive concentration of population and resources in Paris became increasingly acute.

In 1944 France emerged from a foreign occupation, following her humiliating defeat in 1940. Her economy was in ruins, her status as an international power, taken for granted before 1939, was now open to question as the liberation of french territory had been achieved largely through the force of allied arms, with the free french forces and various resistance groups playing an ancillary role. Most importantly, domestic politics were having severe problems as in the latter stages of the war, a virtual civil war was being waged between the various groups who collaborated with the Nazi occupier and the resistance, pledged to overthrow the occupier and his supporters. However despite all this the new generation of political and economic elites had caught the mood of optimism and there followed a radical shake-up of the whole french social structure.

Thus there were three main reasons why regional planning was so important. Firstly rural depopulation which had created problem agricultural areas, mainly in the western half of the country. Secondly, and perhaps most importantly, the excessive concentration of

population and employment in Paris which was draining the provinces and restricting their development, and which Paris could not cope with - leading to unemployment, congestion, pollution and housing shortages. Thirdly, there was the worldwide problem of the decline of old-established industries, such as coal-mining, ship-building and textiles, which led to decayed industrial regions, particularly in the north-east of France. The depletion of the french economy after the war coupled with the post-war economic boom gave an ideal footing for a new start with fresh ideas.

Following the war, the sudden increase in the birth-rate took place everywhere, not just in Paris, and this injected new life into the provincial towns. Paris remained the chief target for immigrants but many went elsewhere. Greater Paris grew from six to nine million, but many other towns doubled in size and Grenoble quadrupled³. Increased mobility by means of cars, faster trains and domestic air services has meant living away from Paris is no longer a hardship, it has also increased the awareness of the provincials, as have the growth of television and tourism. For the most part these changes have been spontaneous, to some degree they were inevitable, whether encouraged by government or not, but the state has closely supported it - with varying success - and has tried to channel and control it.

'L'Aménagement du Territoire' (Regional Development in the widest sense), was virtually unheard of before the war. After 1945 it soon became a major preoccupation of Monnet and his planners. In 1947 Jean-François Gravier, a young geographer attached to the Plan, published his famous book 'Paris et le désert français'⁴, in which he showed how the neglect of the west wasted the country's resources and how the congestion of Paris and other key areas led to inefficiency and high costs. He said that the rural exodus was right and inevitable, but new jobs must be found for these people within their own home areas, not on the other side of France. Gravier's warnings impressed the civil servants and politicians and many of their proposals became accepted as the basis for official policy.

Soon after the war the Government began to encourage the formation of local "expansion committees" and in 1950 it instituted the first scheme of subsidies and tax concessions for firms prepared to shift their factories from Paris or open new ones in backward areas. Other measures managed to narrow some of the gap between Parisian and provincial wages. These steps met with a few successes but in general they were too weak and haphazardly directed so in 1955 rules were implemented to restrict individual building in Paris and funds were provided to assist schemes of regional development. As a result of this, between 1954 and 1960, 600 firms moved out of Paris but these were mostly small and created only 75,000 new jobs⁵. Also most of them moved to towns within 150 km from Paris so the south and the west received little benefit. In 1959 a new zoning law was imposed, whereby special permission was necessary for new factories with more than 500 square metres of floor space, and extensions of existing floor space by more than 10% became subject to controls. Soon afterwards a start was made with regionalizing the Plan, and the 90 departments were grouped into 22 new economic regions, roughly corresponding to the old provinces. The department kept its existing functions but the region had a new Super-Prefect in charge of economic co-ordination. At the same time the subsidies for the new provincial factories were increased, especially for the west and the south-west.

The overall effect of this legislation was to speed up decentralisation. By 1963, 1300 firms had moved away from Paris, creating 200,000 new jobs in the provinces, however a large number of these moves were still to within 150 km of Paris⁶. The Government came to accept that in the more difficult and unpopular areas it must take the lead itself. Therefore it initiated such schemes as new atomic and spatial centres in West Brittany, the development of the Landes forests and irrigation and tourist projects in the Languedoc. The Government also created DATAR (Délégation à l'Aménagement du Territoire et à l'Action Régionale), an interministerial co-ordinating body aimed to help regions in their

search for new jobs and to ensure regional interests were fully represented in national plans.

The Government came to realise that the best way to counter the appeal of Paris was not by setting prohibitions against it, but by stimulating rival centres of attraction⁷. Thus it designated 8 of the largest towns as "Métropôles d'Equilibre" - Lille-Roubaix, Toulouse, Bordeaux, Nantes-St.Nazaire, Nancy-Thionville, Strasbourg, Lyon-St.Etienne, Marseille-Aix, aiming to build up their populations to between 500,000 and a million and equipped other towns as "regional relay centres" to help transmit the influence of the major centres. On the cultural side, new multipurpose arts centres (Maisons de la Culture) were built in several of the larger towns, although these were not all successful, and provincial universities were encouraged to grow faster than the Sorbonne. The universities were also, at last, granted a certain autonomy under the Edgar Faure reforms. Finally, a reform of State administration regrouped the official services in each department under the authority of the Prefect rather than of their respective Ministries in Paris. These measures certainly stimulated regional growth and went some way towards promoting efficiency, but apart from the university sphere, there was little decentralization of authority as far as public services and finance were concerned.

REGIONAL PLANNING AND POLICIES - 1972 to 1981.

In 1972, the year in which a new set of reforms were put into operation, the pattern of regional development was as follows. All the larger towns ringing Paris were doing well, (Caen, Evreux, Rouen, Amiens, Reims, Orléans etc), as all were favourite spots for new industry and some were chosen as sites for new overspill universities. But to the north and the east the already highly-industrialized regions of Flanders and Lorraine were facing problems owing to the decline of their predominant industries, coal-mining and textiles around Lille and impoverished iron-mines around Metz. In the west, Toulouse was expanding owing to the siting of an aerospace centre there as part of government concern for the south-west. Bordeaux was at last seeing a revival and Rennes and the Pau-laq area were flourishing. In Brittany the EEC Investment Bank provided loans for steel and rail electrification schemes as part of its policy to assist less-developed, peripheral regions of the common market, and the French Government financed new atomic and tidal-power projects. These were the major growth points in the west but the rest of "le désert français" was still in trouble. Proximity to other EEC countries was favouring the east rather than the west, thus the main expansion area had been the South-east, thanks to its climate, tourist appeal, natural resources and good geographical position between the mediterranean and the heart of Europe. Huge new refineries and steel works had been built near Marseille, a luxury tourist industry had grown up throughout Provence and Languedoc was experiencing extensive coastal development. However the biggest success at this time was seen at Grenoble, who experienced phenomenal development and was the host of the 1968 Winter Olympic Games.

The reforms of 1972 and 1973 were complex but comprehensive. Briefly, they divided France into three zones, classified in terms of need for development help. Any company setting up or extending a factory in a Zone A region would receive a regional development grant of 25% for a new factory and 20% for an extension. Zone A areas included: regions of the west, south-west, centre and Corsica, the mining and iron-ore areas and the frontier regions of the North and North-east. Firms in Zone B, which comprised 7 départements in the west, received grants of 15% for a factory and 12% for an extension. Zone C regions received 12% for each. A decree of the 5th July 1974 added an additional grant of 5% which could be doubled in exceptional circumstances. Finance for this was from the European Regional Development fund, created in 1975⁸.

There were three other forms of aid from the state. Firstly tax reductions were offered

everywhere except Paris and Lyon. Secondly, firms relocating outside Paris could claim 60% of relocation costs. Finally, the state provided aid for retraining personnel, the actual removal, provision of housing and other expenses.

REGIONAL PLANNING AND POLICIES UNDER MITTERRAND.

In 1981, the new socialist government announced major changes, in particular the introduction of two new forms of regional aid, plus certain other measures to replace the system of incentives. In rural and urban areas with less than 100,000 inhabitants, it was decided that the regional council for each region should determine the amounts, conditions and relevant sectors for grants. A regional policy grant was introduced to replace the preceding grants and this was to be given by the Regional Council using state funds. Only investments exceeding Ffr 25 million would have their grants decided centrally by the Ministry in Paris. Further measures were also announced. DATAR'S budget was increased by 55%, the local authorities were given more power to intervene in the economic activities in their areas, no further public-sector organisations would be permitted in the Paris region, in fact such organisations were expected to be more active in transferring jobs to provincial locations, the grants available to personnel moving to new locations were improved, a fund of Ffr 300 million was set up for regions in the south-west which faced some of the most acute regional problems and finally, the tertiary sector, the only sector in which employment was expanding, was to receive special government attention concerning objectives of regional policy⁹.

Reform, however, was not only directed at granting these authorities more autonomy, but equally at considerably widening their areas of responsibility so that, in theory, a substantially greater number of matters concerning local communities could be resolved at this level. For this reason, in 1982, the government asked each region to draw up its own contract plan, covering research and innovation, energy, education and training, communication industries and health and social conditions, setting out its priorities for investment. Consultation between the regional councils and central government, aimed to ensure that wherever possible regional plans took account of the state's investment priorities. These plans were then used to help finalise the ninth National Plan covering the period 1984-88. The final stage was the signing of a contract between the government and the region which committed each side to a considerable scale of investment (see fig1). In 1984 the state agreed to invest Ffr 35 billion and the regions, Ffr 27 billion (1984 prices)¹⁰. In addition supplementary contracts could be drawn up to cover specific items of development, however this aspect and in particular its affect on the Rhône-Alpes region will be mentioned in more detail later in the dissertation.

According to Tuppen;

*"The legislation passed on decentralisation will undoubtedly long be seen as one of the major achievements of President Mitterrand's years in power."*¹¹

The programme of decentralization set in motion in the early 1980's represented a significant shift in the balance of power away from central government in favour of local authorities. However Tuppen points out that today the political and economic climate is very different. At a time of low economic growth the task of redistributing activities is a great deal harder and more contentious than during a boom period. The recession also emphasized some of the shortcomings of decentralization such as the fact that even now the majority of new factories have been built within a radius of 60-200 kilometres from the capital. Another problem has been the feeling that decentralisation has reinforced rather than diminished the influence of Paris on the rest of France, as an ever-increasing proportion of the productive activities of the country's provincial regions has become dependent upon these Paris-based headquarters.

Today,

*"The rich regions of Europe are getting richer. The poorer, relatively, are becoming more impoverished"*¹².

After decades of spending money on disadvantaged regions, governments have started to cut back. France has cut regional grants by two thirds since 1984 to Ffr 300 million in 1987, although the regions themselves have been empowered to spend a bit more¹³. Why?

According to Yves Mény¹⁴, the various regions have very different ideas concerning their newfound, relative autonomy. The wide-ranging initiatives undertaken increased their budget obligations from less than 10% of total spending in 1981, to 35% in 1984. Mény sees three different local authority responses to decentralization. Firstly there are those local authorities who virtually carried on as though nothing had happened, doing little or using state-supplied resources and personnel to do it. Secondly there were the local authorities who saw themselves as political entrepreneurs, launching innumerable new projects, raising taxes and hiring many new employees. This group were largely, but not exclusively, Socialists, inspired by the Government ideology during the first two years of office. Thirdly there were the Mayors and Councillors of the Opposition who attempted local versions of their national project; ie. limiting expenditure and public sector employment and farming out many services previously carried out by government employees.

Fixed grants were introduced to replace the previous system of reimbursing a certain percentage of expenditure, which meant elected officials were still free to undertake new policies and new spending but this must be coupled with finding ways to save money in order to limit themselves to definite cash amounts. Increasing local taxes was not possible as inflation was low, and these taxes had already been increased excessively in the previous five years.

According to Hazel Duffey¹⁵, there are two reasons for the general European cutback of regional spending by governments. Firstly, they do not feel they are getting value for money, and secondly, with the current trend of decreasing public expenditure, they do not have the money to spend. National governments have tended to cut back the amounts spent on regional incentives, but at the same time they have attempted to make them more effective, however the decline of traditional industries like coal, steel, ship-building and textiles, have make this increasingly difficult.

To conclude, the French Government of the eighties has followed the line of the majority of European governments in that it has decreased public spending and has also uncoupled as much expenditure as possible from the central budget. Local government is therefore being squeezed between relative financial disengagement on the part of the state and the impossibility of raising substantial extra revenue by tax increases¹⁶. Thus in Duffey's opinion, the future of the poorer, less-prosperous regions looks worse now than it has done for forty years.

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CHAPTER TWO

REGIONAL PLANNING AND THE RHONE-ALPES REGION.

THE RHONE-ALPES REGION

Socially, economically and demographically, the Rhône-Alpes must be considered the most highly-evolved region of France after Paris. It is the only french planning region, other than Ile de France, to achieve European-scale status and potential. The Lyon-St.Etienne-Grenoble countermagnet metropolis, one of eight in France, is comprised of three cities of great economic and social contrasts and occupies a nodal location of outstanding potential, both nationally and internationally. The Rhône-Alpes attracts migrants from Auvergne and Provence who might otherwise have gone to the capital, and Lyon is, on all counts, France's second city. Within France, the Rhône-Alpes forms part of the Grand Delta comprising the three south-eastern regions, it flanks the Rhône-Saône corridor and is linked by complementary industries and commercial flows with Switzerland and Northern Italy.

The regional population has grown steadily since 1945, the product of higher than average natural increase, but equally importantly, by sustained immigration, including a strong foreign contingent (in 1976 11% of the population was foreign-born)¹. In spite of this in-migration, there has been a consistent labour-shortage, especially for skilled workers. During the past twenty years the industrial structure has changed: 94,000 jobs were lost in coalmining, textiles and clothing manufacture and the leather industry; on the other hand 159,000 were gained in glass, metal manufacture, engineering, electrical machinery and goods, cars and chemicals². Pockets of industrial decline or stagnation have developed: Ardèche (textile furnishing), St. Etienne (coal) and in the upper Arc valley (electrometallurgy). However a major furthur asset of Rhône-Alpes lies in the marked degree of industrial specialization within an interdependent urban network, a source of strength for promoting both regional balance and allocating growth at different levels by management of the urban system. As a result, the level of unemployment in Rhône-Alpes has traditionally been one of the lowest in France.

Apart from a diverse industrial heritage, the Rhône-Alpes has abundant power resources, (HEP, nuclear power at Bugey, Tricastin and Cruas, petroleum products by pipeline from Marseille-Fos), capable of sustaining major exports of power throughout France. Part of the economic success of Rhône-Alpes was the mobility of labour from agriculture to the industrial and tertiary sector, without external migration. The region generated sufficient new growth in industry and tourism to redeploy workers from farming and declining industries, and absorb the high population growth.

Grenoble, although only becoming the third point on the Lyon-St.Etienne-Grenoble triangle in 1968 is by no means overshadowed by her two neighbours. Instead she is an integral and influential city, not only within the region, but also within Europe. In 1968 the population in the agglomeration of Grenoble reached 332,000³, her postwar growth being due mainly to the success of her industrial development. This was based initially on glove-making, textiles, paper manufacturing and food-processing. The development of hydro-electricity heralded a new industrial era based on new technology. She played a major part in equipping Alpine hydro-electricity schemes, which led to firms manufacturing turbines and tubing, and important civil engineering companies. The availability of electricity led to the growth of chemical industries, plastics and a wide range of engineering activities. The latest stage of industrial expansion has been associated with the growing importance of the city as a research centre, focused on the university, the hydrological research institute, the centre of nuclear studies and the large number of industrial laboratories. This quaternary sector of the economy has enabled both the city

and the region to attract new industries dependent on advanced technology and skilled labour, such as the electronics industry and the construction of nuclear plant. Grenoble also played an important part in the expansion of alpine tourism, as a staging centre and by the manufacture of machinery for ski-lifts and cable-cars used throughout the Alps. The success of industry sustained an enormous population increase, drawn from throughout the nation and abroad, due to the demand for highly-qualified labour and the attraction of recreational facilities.

Thus Grenoble has been an important feature of the success of the Rhône-Alpes, however the region does have certain in-built weaknesses, and has had development problems, mainly as the result of an uneven distribution of growth. The Rhône axis forms a dividing line between an eastern portion of high economic growth rates and a western section, within the Massif Central, which has experienced little net gain, reproducing on a smaller scale, the national problem. For example, the Ardèche, which is predominantly rural, enjoyed few of the benefits of recent developments, the population declined between 1861 and 1962 and has remained virtually stagnant since. Similarly the Loire has had problems with urban renewal and industrial diversification, and saw only modest population growth. Throughout the region in general, weaknesses have shown themselves in the absence of a well-articulated urban hierarchy, limited movement of people between the large towns of the region and rigidity in the allocation and evolution of higher tertiary functions. There were also weaknesses in the functions of many small towns and hence careful location of new urban growth was necessary in order to prevent adverse effects upon existing settlements. The industrial structure is among the least specialized of the French regions, containing a balance between electrical and mechanical engineering, textiles, chemicals and consumer goods, however a large proportion of these firms are controlled from outside the region. On the other hand many smaller businesses have their headquarters in Lyon. Finally, Rhône-Alpes faced a potential problem in that there was lower than average employment in the tertiary sector (37% compared with the national average of 41%)⁴.

REGIONAL PLANNING WITHIN THE RHONE-ALPES REGION - 1966 to 1981.

In 1966 "L'Organisation d'Etudes d'Aménagement de l'Aire Métropolitaine" (OREAM) was created with a regional branch in each of the major French areas. At this time not only French economics and politics, but also those of the rest of Europe, were pushing for rapid expansion programmes with strong economic and urban growth. Thus the aim in France was to double urban population by the year 2000, and for l'OREAM Lyon-St. Etienne itself the guideline set down was,

*"Dans une France de 75 millions d'habitants en l'an 2,000, plus de 7 millions habiteront et travailleront dans la région Rhône-Alpes"*⁵. (Of the 75 million inhabitants of France in the year 2,000, 7 million are to live and work in the Rhône-Alpes region).

A creation of 700,000 jobs, 18,000 to 19,000 per year, in the metropolitan area. The target figures reflect the total confidence in economic and demographic growth. For example, further education was to increase from 35,000 students in 1966, to between 150,000 and 250,000 in the year 2,000, and in the research and development sector of the region, the number of engineers and technicians was planned to rise from 3,000 in the sixties, to 30,000 in 1985, to 100,000 in the year 2,000⁶. This confidence was perhaps justified at the time as between 1962 and 1966 France experienced one of the biggest growth rates in her whole history, and the Rhône-Alpes region was one of the stars of this growth.

In 1968, in an attempt to resolve these inequalities within Rhône-Alpes, and as part of the national regional planning programme, a spatial strategy was approved wherein various

measures and aims were decided upon. It was agreed that Lyon should become a 'métropole d'équilibre', linked with St. Etienne, to extend the influence of the metropolis into the massif central, and to provide facilities such as industrial retraining, not yet developed at Lyon. This spatial strategy rejected both the concentration of all development at Lyon and the dispersion of growth to satellite growth points around the Lyon conurbation. Lyon was to be the principal growth pole, focused upon a metropolitan and regional tertiary role. The Part-Dieu extension (38ha, completed in 1976) of the central business district would accommodate the major new developments, though the original ambitions for a 'regional decision-making centre' and a commercial development of 110,000 square metres were reduced both in scale and scope. The extension of the conurbation would take place eastwards with a secondary centre at Bion, in the direction of the new international airport at Satolas.

The most ambitious part of the plan was the creation of two new towns, inspired largely by the overall success of the British New Towns. L'Isle d'Abeau, sited to the South-east on the Lyon/Grenoble axis, was to have a population of 150,000, specialising in tertiary and light industry. Méximieux, to the North-east on the Geneva/Lyon axis was to specialize in heavy industry and mechanics due to the existence of an enormous potential industrial zone, rich in water, bordering the Rhône, and was aimed at a population of 350,000⁷. These two New Towns were to make up a triangular scheme with Lyon, with the sides being made up of motorways and railways so that the inhabitants of one point could be at one of the others in less than half an hour. Satolas airport, in the middle of the triangle, would prevent development there, thus guaranteeing the functioning of this tripodal agglomeration and allowing the whole geographical valley of the Rhône to expand.

Although Grenoble had developed a wide range of science-based growth industries and needed no stimulus from priority government investment, the same was not true of St. Etienne. At St. Etienne industrial reconversion from mining and heavy industry had become a central issue, development strategy being based on the classic recipe for attraction of new firms in growth industries, a strengthening of the regional (not metropolitan) tertiary sector, and on more efficient links with Lyon. A major urban extension of St. Etienne northwards was to provide for a secondary central area, to relieve pressure on the old centre undergoing major urban renewal.

However, despite these well thought-out ideas, in 1970 the government decided not to construct Méximieux, but it was too late to rethink the plan. Thus it was maintained, with a few alterations, but no longer had the same meaning. The result is that L'Isle d'Abeau has had to find its own existence, distinct from Lyon, and the planners have been obliged to define its vocation and role. L'Isle d'Abeau now has three main purposes. Firstly there is much ambition within the town, the New Town has a role which has largely exceeded the Lyon region, extending to the east of France and a part of Europe, thanks to its communications network. In fact, it could be said that L'Isle d'Abeau is the pilot town of a new futuristic urbanisation. Secondly, L'Isle d'Abeau acts as a link between Lyon and Grenoble, where the two cities can combine forces and interests. Thirdly, L'Isle d'Abeau is often classed as, "La petite soeur de Lyon"⁸.

Thus, under the seventh plan (1976-80), the Lyon-St.Etienne-Grenoble metropolis was designated for the build-up of higher tertiary activities, with Greater Lyon as the major recipient but with complementary interchange between the three cities of very different industrial characteristics. For the most part the objectives of the fifth and sixth plans were achieved. The rate of population growth in the regional metropolis was cut back and the rural exodus was restrained. In the long term an aggrandissement of Lyon and greater independence of Parisian control may best be achieved in an international context, as the strategic location of the region on the Rhône/Rhine axis and proposed motorways may strengthen connections with Switzerland and Northern Italy.

Under the seventh plan, the Rhône-Alpes needed to achieve about 200,000 new jobs to provide for the expected population, although in the short term, the economic recession cut back the immigration of foreigners to a trickle⁹. The relaying of the benefits of economic growth from the metropolis to other parts of the region is perhaps the greatest single planning issue. The diffusion of urbanization from Greater Lyon is to favour the New Town at L'Isle d'Abeau, but also the ring of smaller and medium-sized industry, will concentrate expansion in the northern sector. The programme for stimulating growth at medium-sized and small "anchor-point" towns is to relay benefits to the uttermost rural areas.

Given its continuing growth potential, its balanced population and workforce structure and distribution, Rhône-Alpes was well-fitted to develop within the objectives of the seventh plan, which advocated: quality of life (extensive and diverse recreation space, traditional life styles), human-scale planning and improvement of the living environment.

THE RHONE-ALPES REGION UNDER MITTERRAND.

The Rhône-Alpes region has benefitted in many ways under Mitterrand and his ambitious regional planning projects. The policy of promoting the transfer of sizeable sections of large or prestigious organisations away from the capital is one which has particularly helped Lyon over recent years. For example, Lyon has seen the arrival of EdF's nuclear engineering and design company (SEPTEN), the decentralisation of a sizeable part of SNCF's commercial and computing services and the transfer to the city of the science faculties of the Ecole Normale Supérieure. In addition, in 1985, the city was selected as the site for Interpol's new World headquarters.

Lyon has changed a lot over the past decade and now has many attractive features within the city's business environment. For example, the newly expanded central commercial district of "La Part-Dieu" offers many services and extensive office accommodation, the city is easily accessible from other business capitals (notably Paris due to the substantial reduction in journey-times between the two cities, brought about by the TGV), and not least, her location at the head of the dynamic Rhône-Alpes region which houses over five million people¹⁰.

The contract plans introduced in 1984, however, have had mixed results within the region. The regional council in 1982, when the plans were being drawn-up, was in the hands of the opposition, and thus was reluctant to follow the government lead in certain areas. For example, despite the large-scale and serious character of the social and environmental difficulties found at Les Minguettes, a suburban housing estate in Lyon, no provision for this had been made in the regional plan. This necessitated protracted attempts by the government to negotiate a separate contract. Alternatively one of the priorities of the ninth National Plan was further development in those regions with an existing base of technology, which was obviously a bonus given the concentration of high technology in the Rhône-Alpes. This has benefitted the region as a whole, as have the improvements to the region's capital, Lyon. In addition, the Rhône-Alpes region is also negotiating a supplementary contract with the government concerning congestion on the roads during the winter, especially during the french national holidays in February, owing to the increasing popularity of skiing holidays and the presence, within the region, of numerous skiing resorts. A decision has been made to construct a motorway extension between Chambéry and Albertville. Further changes are currently under negotiation, the most important of which is the electrification of the rail link to Bourg St. Maurice, which would allow TGV services from Paris to penetrate the area and so alleviate congestion on the roads. However there have been some problems with the negotiations for this latter proposal so benefits are unlikely to be seen before the 1990's.

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CHAPTER THREE

THE POST-WAR DEVELOPMENT OF GRENOBLE

The valley of the Isère houses some of the most advanced industries in Europe, including electro-chemicals, electro-metallurgy, heavy machinery and nuclear laboratories. Grenoble is the valley's figure-head. With her industry, university and research centres, plus a young, dynamic population, she has become, since the war, unique in that everything seems to succeed. Yet it was only 150 to 200 years ago that Grenoble was able to develop freely. She is situated at a remote crossroads in terms of roads, rivers and railways, at the confluence of two rivers, the Drac and the Isère, known for their numerous and violent floods. Thus Grenoble could not develop until the two rivers had been tamed in the middle of the nineteenth century. The rapid expansion which followed was closely associated with industrial development and the transport revolution. In 1850, Grenoble was the 30th town in France, by 1946 she was the 19th, reaching 100,000 inhabitants in the same year¹.

GRENOBLE: DEMOGRAPHIC AND INDUSTRIAL EXPANSION - 1950 to 1975.

Grenoble was just a quiet town, known only for her glove industry until, in the 1860's, some french engineers experimented with a new idea of drawing electric power from the high waterfalls of the Belledonne and Chartreuse mountains. This began the age of 'white coal' (houille blanche) and Grenoble has never looked back. Many factories came to settle near the new sources of power and Grenoble's population doubled at a time when most of France was stagnating. By the 1950's the largest firms were Merlin-Gérin (electro-metallurgy) and Neyrpic (turbines and hydraulic research), both among Europe's leaders in their fields. The university was also developing fast, especially in science, spurred by the presence of Professor Néel and other outstanding physicists. It was this, coupled with the growing awareness of the need to decentralise from Paris, that persuaded the government, in 1956, to choose Grenoble as the site for France's principal nuclear research centre.

Despite the general population boom throughout Europe, following the Second World War, Grenoble's demographic growth must be considered spectacular. Between 1954 and 1962 the population of Grenoble and her suburbs rose from 165,000 to 240,000, an increase of 46%. By 1968 this total had risen to 325,000, an increase of 35%. Both these periods represent the highest increases in the Rhône-Alpes region, and correspond to an average annual growth rate of 4.1%². From 1950 to 1955 this increase only affected the city of Grenoble itself, but little by little, the surrounding villages began to take over the expanding population, to the point where they alone were supporting the increase between 1962 and 1968. In this latter period, more than five of these villages saw their population more than double. On the one hand the increase in population was a natural growth - births exceeded deaths, but on the other hand, more importantly, a large proportion of the growth was caused by a positive migratory balance.

The unusual combination of touristic setting and intellectual and economic dynamism sets Grenoble far apart from conventional french towns. The reason for Grenoble's phenomenal successes was not any particular Government pressure, nor, until 1965, any particular municipal dynamism. According to Ardagh³, the two major contributory factors were ; the nearby invention of hydroelectricity in the last century and, more recently, the skiing which attracts people from all over Europe, as no other big town is so near to the mountains. The rest was a snowball effect: the more factories and intellectuals came, the

more others tended to follow.

Increased transport facilities and the standardization of energy tariffs took away Grenoble's historic advantages in electrochemicals, electrometallurgy, heavy metal and foodstuffs, which led to decline in these areas, however the growth of electrical construction around Merlin-Gérin, and Neyrpic's diversification towards hydraulics and stationary materials were fortunately strong enough to ensure the continuation of a long-lived industrial progression. But it is in the scientific field that Grenoble received its biggest boost, with the creation of CENG (Centre d'Etudes Nucléaires de Grenoble) and university laboratories specializing in magnetics, electrostatics, liquid engineering, low temperatures and chemistry. At the same time came the powerful development of SOGREAH (Société Grenobloise d'Etudes et d'Application Hydrauliques), which employed more than 800 people in the study of hydraulics and the creation of research centres; at Pêchiney looking into liquid air and aluminium, and at Ugine researching magnetics.

The liaison between the university and industry led to a reorganisation of the Grenoble economy towards electronics. The orientation of Merlin-Gérin towards electronics, the creation by the Commission of Atomic Energy (CEA) of LETI (Laboratoire d'Électronique et de Technologie de L'Informatique) are the strong points, along with the installation of the last big industrial unit: Hewlett-Packard. However the big Grenoble enterprises have become increasingly controlled by big, national groups, often at the cost of long restructuring. Development has also been assisted by American investment, with Caterpillar, Becton-Dickinson and, above all, Hewlett-Packard which led to a strong movement towards exports.

However, between 1954 and 1962, faced with this phenomenal growth demographically and industrially, Grenoble found herself dangerously under-equipped and without the means to control this galloping urbanization. By 1962 no responsible policies had been brought out in an attempt to control the anarchical urban development as it had all happened so quickly and at such a level that Grenoble's municipal council simply wasn't ready and couldn't cope. In the absence of an urbanization plan, the essential public amenities (highway maintenance, cleaning, schools etc), had to follow as best they could, the private housing construction programmes. There was a mass sale of public land, and the increasing fiscal taxes, took up a large part of the town's monetary resources. It became more and more important to define a long-term finance policy.

In 1964, La Commission des Equipements Urbain, while preparing the fifth plan, decided the following:-

'Les équipements urbains existant à Grenoble correspondent aux besoins d'une ville de 80,000 habitants, alors qu'il s'agit de satisfaire ceux d'une agglomération de 300,000 habitants'⁴. (The present urban facilities at Grenoble correspond to the needs of a town of 80,000 inhabitants, whereas it is a matter of satisfying those of an agglomeration of 300,000 inhabitants).

To cope with this lack of public amenities, the fifth Plan made replacing everything within the next five years, its priority. This was not considered a choice, but a necessity. Added to this, the city had been chosen to stage the 1968 Winter Olympic Games, a major triumph for Grenoble, but it meant that the town had to act quickly. In 1964, Hubert Dubedout found that the reason his water supply constantly failed in his fourth floor flat was because the city was served by a water system unchanged since 1883. Thousands of others were in a similar plight so Dubedout launched a public campaign to get the mayor to do something - and he succeeded. Encouraged by this he formed a non-party with some friends from the City's scientists, to contest the local elections of March 1965. Nearly all the intellectual immigrants voted for Dubedout and he became Mayor of Grenoble. Dubedout and his team revitalized the "Mairie" and then worked

hard to get Grenoble ready for the Olympic Games.

Thus, within thirty months, certain objectives such as traffic circulation and highway maintenance had already been completed. However, also because of the games, new obligations became apparent, the extent of which nobody in Grenoble had realised. Besides preparing a huge new ice rink and improving the skiing facilities at Chamrousse, Alpe d'Huez and Autrans, this involved a complete overhaul for the town as a whole. New airports and motorways had to be built, a new railway station and post office, and an olympic village to house 4,000. Three quarters of the total cost of 1,000 million francs was borne by the State, the town had to find the rest and some of the burden fell on ratepayers, but the lasting benefits were enormous. Grenoble acquired, in a very short time, the modern infrastructure that would otherwise have taken twenty years. There is also, thanks to the Games, a magnificent 'Maison de la Culture', which is running more successfully than most in France and has added greatly to the town's intellectual life. Thanks to both the Olympic Games and a dynamic new Mayor, Grenoble received the town-planning policy it so badly needed.

GRENOBLE: 1975 to 1981.

After twenty-five years, the exceptional population increases ended in the eighties. The estimates realized by l'Agence d'Urbanisme' at the beginning of the housing evolution, show that the population increase undoubtedly reached a peak in 1979-80, followed by a steady decline. The City then moved more towards the general pattern of french urbanization marked, since the middle of the seventies, by a net halt in demographic movement. From 1975-82 the increase added up to a total of 3,496 new inhabitants, with an annual growth rate of 0.13%⁵. Even taking into account the transfer of urbanisation to beyond the agglomeration, this growth is still weak.

The rate of natural increase changed very little, thus it was with the migratory balance that the problem lay. Between 1975 and 1982, the migration figure was negative for the first time since the middle of the nineteenth century, which could have serious consequences for the agglomeration and the urban region. This migration deficit showed itself mostly in the City and in five of the nearer communes, therefore although such a turnaround is common in cities, were there also local causes? One explanation is the acute employment and housing problems experienced by Grenoble and many other European Cities, which began in 1973, a product of the depression⁶. However it is difficult to say whether it was the depression and its effect of the inner city which deterred migrants or the fall in migration (which was also a national trend) which caused the problems within the city. The fact that these changes were common in many other cities seems to imply that neither triggered off the other, the post-war boom had simply come to an end. Due to this slowing down of immigration, Grenoble now relies largely on natural growth to renew her population. For the first time in France, the population growth in towns is now dependent on natural growth rather than migration. For a city so much geared towards expansion this could have caused much more serious problems than it did, but fortunately Grenoble is in a relatively favourable position thanks to a young age structure, a product of the previous wave of migration.

Despite more favourable results than those of other french agglomerations, the disruptions caused by the depression did leave their mark on Grenoble. At the beginning of 1983, industry and building were employing no more than 61,400 people, a level close to that of 1962⁷. These activities, although productive, have not been the major suppliers of employment for many years and will be so less and less in the future. This decline in industry and building were accompanied by a progressive tertiary sector, which is a pattern not specific to Grenoble, but follows the national level in developed countries.

Before the recession manufacturing activities had been dwindling due to the development of health activities, teaching, commerce etc, which became an alternative source of work. This situation revealed more of a division of work than a phenomenon of disindustrialisation. A real break became apparent in 1975 and since this date there has been a distinct decline in the number of jobs available. Within the agglomeration 1,500 jobs disappeared each year, a total of 11,400 in eight years⁸. Closures accelerated at a time when the number of new ventures was continuing to fall, and many firms had to reduce their personnel.

According to Jacques Joly⁹, two characteristics have made Grenoble's industry stand out in the past, and allowed it to get through economic crises without too many problems: its diversification and its orientation towards high value goods. The diversification has been gradually diminishing but even so Grenoble is far from the weak position of some mono-industrial regions. The major groups of industry, with the exception of naval, aeronautical and automobile construction are significantly present in the agglomeration. Certain producers, already well-developed, have increased in strength since 1975. This has been so in mechanical construction and the electrical and electronics industries, now representing more than half of total industry; 53.2% compared with the national level of 22%. This industrial goods sector is approaching 60% of the added value of local industry and had become extremely exportable. It found its level of employment in 1983 was approximately equal to that of 1975, but this comparison hides a very different development. In the face of sustained employment in electrical construction, the lows registered in mechanical construction, are offset by the highs in electronics - the only industrial sector to have known employment growth since 1975.

Other sectors, such as metalwork, chemistry, stationary and plastics, which are grouped as industries manufacturing intermediary goods, are still well-established in the agglomeration - responsible for nearly a third of employment. These industries have, however, seen more than 2,500 jobs disappear in eight years and their importance is slowly diminishing. Finally the industries manufacturing consumer goods, which were employing one worker in four, twenty years ago, were employing no more than one in eight by 1983. Nearly a third of jobs have been lost since the beginning of the recession. Machine construction seems to be the most solid sector and that which is best geared towards the Grenoble economy. More than all the others these industries have benefitted from the excellent scientific environment and the highly-qualified local manual workers.

GRENOBLE: TODAY.

Today, the number of provincial cities with a private research sector and accompanying range of higher education establishments is limited. Toulouse, Bordeaux and Strasbourg are amongst some of the larger centres which fall within this category, but none challenges the leading position held by Grenoble, where 10,000 people out of the city's work-force of 172,000 work in the research field. In this respect Grenoble far exceeds the importance of Lyon, her much larger and close neighbour; nearly 40% of those employed in research in the region of Rhône-Alpes work in Grenoble. Recent government confidence in the city, in this respect, is shown by the fact that many important government research units are located there, for example; in 1978 the CNET, the Centre National d'Etudes de Télécommunications, joined the CENG, CEA and LETI - one of Western Europe's most eminent centres of research in microelectronics.

Numerous links exist between the institutions of further education, the research and development sector and industry, of both a formal and informal nature. The bias towards training and research in electronics and microelectronics is also reflected in the city's manufacturing activities; Grenoble is a major centre for the production of electronics components, notably integrated circuits, with the electronics industry, as a whole, now

employing 9,000 people in the city.

However Tuppen, in his book; "France under Recession 1981-1986"¹⁰ believes that Grenoble no longer displays the dynamism which underlaid her remarkable expansion in the 1960's and early 1970's. Less than a decade ago the idea still prevailed that while the recession might adversely affect the economies of other cities, this could not happen here: after all the industries upon which Grenoble depended were those of the future. Yet in recent years growth has slowed considerably, tarnishing the city's image of success. The rate of increase of the city's population has slowed markedly (as the number of newcomers is now exceeded by those leaving the city), the total level of employment has been increasing only slowly, with jobs having been lost at a high rate to industry (see fig.2). Part of the explanation would appear to lie in factors influencing the pattern of growth in the country generally, such as lower birth rates, a reduction in immigration and a restructuring of industry in favour of capital rather than labour; also increasing decentralisation and suburbanism, provoked by the constrained site of Grenoble, tend to give an exaggerated impression of the loss of dynamism in the city itself. However there is also the feeling that during the years of expansion insufficient emphasis was placed on attracting manufacturing activities compared with research, leading to a relative weakening of this sector of the economy. Whatever the cause, following an extended period of sustained expansion, adapting to a different and less attractive model of development has proved difficult for the inhabitants and their municipal authorities. The need for the city to capitalise fully upon her assets as a centre for high technology now appears of critical importance.

The decision to site the European Synchrotron Radiation Facility (used to accelerate electrons) at Grenoble, a project proposed by the European Science Foundation will give a boost to the Rhône-Alpes growing reputation for science and technology and is a major "coup" for Grenoble, promising to further enhance her status as a European scientific centre. However the decision to site the Synchrotron at Grenoble was reached amidst bitter arguments and may have caused the government's regional policy irreparable damage. When the regional contract plans were signed and agreed in 1984, the government's contract with the Alsace region stipulated that Strasbourg would be the official french choice for the location of the proposed Radiation facility. Strasbourg was delighted as this corresponded with her desire to enhance her status as a European scientific city. Belatedly, however, Grenoble also appreciated the sizeable potential benefits in terms of employment opportunities and research spin-offs that would result from such an investment. Moreover she had a strong case to argue, given the importance of her existing research laboratories in nuclear physics and electronics. Aided by the strong support of local politicians, extensive lobbying by the city's scientific community and pressure from the Atomic Energy Commission (CEA), on the 17 October 1984, the government decided to back Grenoble in preference to Strasbourg. Reaction in Alsace was bitter and hostile, to the extent that the regional council challenged the decision in the courts, with the result that the government's action was declared illegal, although this is unlikely to alter the eventual location of the Synchrotron. Understandably the government's failure to respect its commitment in Alsace led to unfavourable conjecture about the government's attitude concerning other regional contracts.

Despite these problems, the fact remains that Grenoble is to be the site of the European Synchrotron Radiation Facility and her future looks bright. The new, highly modern, tramway, opened in September 1987, has meant most commuters from the surrounding villages can reach the city centre in less than forty minutes and has gone a long way towards reducing pollution and traffic congestion. The university continues to attract thousands of students and scientists each year from the Rhône-Alpes region, but also from the rest of France and all over the world. The 1992 Winter Olympic Games are to be held at Albertville, one of Grenoble's alpine neighbours, a choice obviously influenced by proximity to the successful host of the 1968 Olympic Games. But the future of Grenoble seems to lie in her role as one of the most successful science parks in France, a direction

which will be discussed in the following chapter.

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CHAPTER FOUR

GRENOBLE: A UNIVERSITY CITY AND A SCIENCE PARK.

GRENOBLE: A UNIVERSITY CITY.

Grenoble is the only really successful example in France of a close and productive co-operation between universities and local industry¹. Today, the enormous modern university campus is the site for three universities, with more than 36,000 students, an exceptional complex of laboratories and research centres and more than 7,000 teaching and research personnel². There are also eight colleges of further education within the city. Grenoble has an international reputation which shows itself each year in that she is the venue for numerous intellectuals and foreign universities and the presence of more than 5,000 students from 150 countries³. However this did not happen overnight. This is the result of a dynamism based on a strong tradition, a thirst for knowledge and a spirit of enterprise which have prevailed here for several centuries. The unique alpine environment played an important part in the vitality necessary to survive in such beautiful but exacting surroundings.

The history of the university is closely linked to that of the city and the province. The Dauphiné, which the Count of Allon built into an autonomous domaine, became a true entity in the early fourteenth century due to the drive and leadership of its last Dauphin, Humbert the second. In 1339, while on a trip to the papal court in Avignon, Humbert convinced Pope Bénédict the second to found a university in Grenoble. The university had four sections: canon law, civil law, medicine and liberal arts (ie. sciences and arts). Although the university lasted less than a century, it was the beginning of a long-lasting tradition. There were many long periods when Grenoble had no university until, under the Guizot government in 1847, the university was re-established and found stability. From then on the university of Grenoble has become a true establishment of study and research.

The blossoming of the university, although subject to political uncertainties in the country, found particularly favourable conditions in Grenoble, resulting from another revolution: the technological and industrial revolution brought about by the advent of hydro-electricity. In 1869, at Lancey, just outside Grenoble, Aristide Bergès used water to produce electricity for the first time, a new source of energy that dramatically changed our lives. In 1882 Grenoble was the location for the first experiments in municipal electric lighting, similarly in 1883, Duprez conveyed electricity between two towns, Vizille and Grenoble, for the first time.

There followed a whole range of technical applications in electro-metallurgy and electro-chemistry. Grenoble, a parliamentary city, due to her technical achievements, rapidly became an active industrial centre, with paper mills, chemical factories, cement works and firms specializing in hydro-electric equipment. The ties established between university research workers and industrialists were greatly beneficial to both. While the city grew and became more economically diversified, prestigious scientists increased the university's scientific capacities. Under the second empire, the renowned mathematician, Charles Fourier, then Prefect of Isère, gave an impetus to mathematical studies, but a major boost was given by François Raoult, one of the founders of physical chemistry, who opened new avenues of research for the University. Under his guidance, a School of Geology was set up where such men as Charles Lory, Wilfrid Kilian and Léon Moret worked. In 1892, the three faculties of Law, Arts and Science joined together to create an Electro-technical institute, where Paul Janet gave France's first course in industrial

electricity.

The scientific importance of Grenoble attracted numerous students and researchers from all over the world. To welcome them, the Arts Faculty created a Fellowship Committee for foreign students and it was on this committee's initiative that Théodore Rosset founded the first phonetics institute in France in 1904. His original findings were rapidly put to practical uses, including the first courses in pronunciation to use records. Thus the scientific study of speech benefitted from the grouping together of different disciplines and varied research at the crossroads of the arts and science, a unique experience in France. Because of the increase in scientific activity 1889 saw the publication of the University Annals, which in 1924 split into two sections, Arts and Law, Science and Medicine, thus enabling the University research workers to circulate their findings, especially to Industry. The University of Grenoble has been a dynamic centre in a city which was transformed by the Industrial Revolution, her population rising from 30,000 to 140,000 between 1850 and 1950.

The link between the business world and the university world was confirmed in 1947, with the founding of the Society of Friends of the University of Grenoble, whose initiator and first president was the great industrialist Paul-Louis Merlin. At this time another revolution was about to come about, that of atoms and computers, and the University, with its rich and diversified experience, was in a strong position to meet this new challenge.

Grenoble and the Dauphiné were hit hard by the Second World War, but the desire to reconstruct was great. The years that followed the war saw the Grenoble 'boom', crowned by the 1968 Winter Olympics. Through its research capacity the University, to a great extent, led Grenoble's expansion. Having a number of outstanding men certainly helped Grenoble become important, not only nationally but in Europe and the world over as well. In 1946, Louis Néel created one of the first laboratories of the French National Centre for Scientific Research (CNRS), the laboratory of Electrostatics and Physics of Metals followed several years later by the Research Centre for Very Low Temperatures, directed by Louis Weil. To make the most of this laboratory research, new industries set up in Grenoble, and so the city entered straight away, the scientific revolution which marked the years 1950-80.

In 1956, the "Commissariat à l'Energie Atomique" (CEA) were looking for a site for a leading research facility. Because of the demands of decentralization they had to look away from Paris and thus they chose Grenoble as the location for the Centre for Nuclear Research (CENG), directed by Louis Néel, where research is largely focused on the business world's requirements, giving Grenoble's industries a decisive boost. This scientific breakthrough, which made Grenoble a major centre of Physics in France, imparted a research impetus to every discipline. The humanities, traditionally a discipline preferring individual research, now became open to team research. In 1951, the faculty of law organized a conference dealing with the legal, economic and social aspects of nationalized companies. In the 1960's centres aimed at renovating research in a number of fields in the social sciences were set up: the Legal and Economic Institute for Energy, the Centre for Study and Research in Regional Planning and Development, the Centre of Economic, Social and Institutional History. Numerous literary institutes followed suit. The vitality of the Psychology Institute, the creation of a Centre of Dialectology, the International renown of the Centre for Standhalien studies, the very new research on the relationship between literature and the imaginary, all these aspects show that the University of Grenoble has given an indispensable cultural base to the scientific revolution.

The decentralisation reforms of 1964 included encouraging the universities of provincial France to grow faster than the Sorbonne. The universities were also granted a certain

autonomy from Parisien control, which gave the University of Grenoble more freedom to experiment with new ideas without having to consult the capital. In 1966 l'OREAM (Rhône-Alpes) produced target figures for the year 2,000. In the report l'OREAM proposed that the number of students in further education within the region should rise from 35,000 in 1966, to between 150 and 250,000 in the year 2,000 and that the number of engineers and technicians involved in the research and development sector should rise from 3,000 in 1966 to 30,000 in 1985 and 100,000 in the year 2,000⁴. These figures were arrived at with the assumption that the post-war 'boom' was a permanent feature therefore due to the recession it is unlikely that the targets will be reached, however they show that further education, research and development were receiving considerable encouragement and assistance from the government at the time, which may account, partly, for the extraordinary advances at Grenoble in this area.

1970 marked the peak of the intellectual pooling of ideas and also a new point of departure in the quest for knowledge. That year Louis Néel won the Nobel Prize for Physics, an achievement which reflected on the whole university community in Grenoble while the reforms of 1968 brought about the creation of new universities. The three new universities quickly proved that this structure did not alter the research but in fact gave it new drive.

The National Engineering Institute and the Science and Medical University expanded thanks to numerous international agreements. Thus, in 1967, in collaboration with the Federal Republic of Germany and then with Great Britain, the Laue-Langevin institute was created. This institute has the most powerful high-flux neutron reactor of its kind in the world. In 1971, in an agreement between the French National Centre for Scientific Research and the German Max-Planck Institute, the National Centre for Intense Fields was set up, followed by a Millimetric Radio-astronomy Institute in 1979, created by a French/German agreement. Similarly in the rapidly expanding field of medicine, several areas have a wide reputation amongst which is the research conducted in neuro-surgery.

The University of Social Sciences is strong in many disciplines; history, psychology, administration, urbanism and is in the foreground concerning law, politics, management, economics and sociology. The University uses this interdisciplinarity as a basis for an active policy of team research.

The University of languages and Literature, while relying on a core of traditional disciplines, quickly played a leading role in areas that are going to develop substantially in a world in which things are now experienced on a global scale: thus the whole field of communications as well as modern languages geared to business purposes have been placed in the foreground.

Alongside the universities, is the important "Institut National Polytechnique de Grenoble" (INPG), which assures all-round engineering training and offers, through its seven "Ecoles Nationales Supérieures d'Ingénieurs" (ENSI), amongst the most costly in France, the opportunity to specialize in computing, applied mathematics, electrochemistry, electrometallurgy, electricity, electronics, radio-electricity, hydraulics, mechanics, paper-making, printing and physics. Finally, the recently created "Ecole Supérieure de Commerce de Grenoble", which rapidly became one of the most productive of the researching "grandes écoles".

In spite of administrative divisions, the expansion of the scientific community is due to the strong ties which bind the universities together. On the university campus (created in 1962 under the leadership of Louis Weil, then Dean of the Science Faculty), there is much evidence of team research. With men from different disciplines all working

together, and sharing laboratories and other facilities. For example, the Institute for Spoken Communication, where the Laboratory for Spoken Communication of the National Engineering Institute and the Phonetics Institute of the University of Languages and Literature, join efforts to complement traditional research in phonetics by the analysis and synthesis of speech, the aim being to meet the requirements of an era trying to perfect the dialogue between man and machine. Thus Grenoble has gradually attracted scientists from all spheres and offered them high-capacity, often exceptional, research facilities. They form a pluridisciplinary world where fundamental and applied research and technology are closely associated, where research workers from the public, semi-public or private sectors, from Universities, the Atomic Energy Authority, industry, all meet. Several hundred of them, coming from many different countries.

For the students, the University offers important equipment, laboratories, libraries, which all the establishments make use of, a teaching team of a high level and fine research and international exchanges. As a result of the importance of further education in Grenoble, more than 10% of Grenoblois have a degree from a university or a college of engineering or commerce, and more than a third of the active population are executives or professionals.

THE ROLE OF GRENOBLE AS A SCIENCE PARK.

The future of Grenoble obviously lies predominantly in the field of science and technology. The city is already a major scientific centre, but Grenoble's ambitions are high. According to Tuppen, she is looking to develop into a "science park", referred to variously under such names as "cité scientifique", "parc technologique" and "technopole". The basic idea behind this is the association of research, higher education and innovating industries, and is essentially American in origin, derived from the extremely successful "high-tech" industrial park which grew up spontaneously around the University of Stamford, leading to the creation of the so-called Silicon Valley. Similarly the "science city" at Tsukuba in Japan is also regarded as an influential pioneer development in this field. The mix of activities indicated above is considered vital due to their supposed close interdependence and interaction however the site must also offer a high quality environment in order to attract investors and highly trained and skilled staff. Proximity to an international airport or similar major transport links is also important due to the multinational nature of many of the targeted companies and the importance of the exchange of information which occurs at this level.

Over recent years the number of science parks, either under development or proposed, has reached twenty in France. The concept seems to have become "fashionable" and so the majority of local politicians and planning departments in the country's leading cities have sought to include such a project in their development strategies. Metz, Brest and Marseille remain merely proposals, whereas strong candidates for expansion, but where there is still relatively little evidence of development, include Strasbourg, Montpellier, Nantes, Toulouse and Bordeaux. More substantial progress has been achieved in cities such as Nancy, Rennes, Lyon and Lille, but the two leading sites are easily those at Sophia Antipolis (Antibes) and Grenoble, where development has been underway for more than a decade. Thus, the Rhône-Alpes region contains two promising science parks, Lyon and Grenoble.

Until recently it seemed that Lyon had failed to capitalize on its potential for attracting "high-tech" firms. The city has extensive education facilities; three universities and many "grandes écoles", and also various research centres are located there, (eg. Institut Mérieux, Rhône-Poulenc, SEPTEN, Elf-Aquitaine), specialising in fields such as medicine, pharmaceuticals and biotechnology, yet this background failed to start the multiplier effect of bringing related science-based activities to Lyon. However the Ecole Normale Supérieure

has decided to transfer part of its teaching and research in the technical and scientific fields to a new complex in the district of Gerland. Gerland is being extensively redeveloped and there are high hopes that the situation will change. But Lyon's present character is much more associated with that of an industrial zone rather than an environmentally attractive tertiary activity park, which may compromise the future.

The developments at Lyon though, appear relatively insignificant compared with those at Grenoble. The science park at Grenoble has been established at Meylan on the eastern outskirts of the city and is known as ZIRST (Zone pour l'Innovation et les Réalisations Scientifiques et Techniques). This project first became a reality in the early 1970's when the municipal authority of Grenoble decided to create a special industrial zone designed to accommodate, exclusively, innovating industries and firms committed to the use or development of advanced technology. The aim was to capitalize on the city's very considerable potential in "grey matter" - the universities, the Institut National Polytechnique and a series of public and private research laboratories (eg. CEA, CNRS, Air Liquide). A site adjacent to the Grenoble/Chambéry motorway was selected as an appropriate location for the scheme, lying amidst a relatively affluent residential district (Meylan) and close to the main university campus.

By the mid-1970's development was fully under-way with policy determined by certain principles which lay behind the conception of the ZIRST. First, only specific types of firm would be accepted; they had to be engaged in research and development, producing advanced prototypes or offering a specialized service to high-tech companies. Overriding emphasis was placed on the soundness of the enterprise's capacity for research. Second, development was to be oriented towards the maintenance of a high quality urban environment. Firms had to agree to comply with various requirements concerning the design and presentation of their premises, while the area's wooded and parkland character was to be preserved wherever possible. Third, the zone's development plan was kept "flexible" to enable the accommodation of as wide a range and size of activities as possible, and fourth, communal services such as a restaurant complex were to be established to the mutual benefit of all firms in the "park"⁵.

Today, on the 65 hectare site, there are over 140 firms providing nearly 3,500 jobs⁶. Most of the companies are relatively small, but there are a number of larger concerns including; Merlin-Gérin and CNET (Centre Nationale des Etudes des Télécommunications), employing respectively over 300 and 1000 workers. The range of activities undertaken in the ZIRST is also extremely varied, but the fact that approximately three-quarters of the firms are engaged in research or development related to the field of electronics has led to it being known as the "mini" Silicon Valley. Grenoble's particularly attractive setting amidst the Alps, her proximity to the national motorway network, the high quality of the environment of the science park itself and an innovative organisation responsible for its management are all major contributory factors accounting for the considerable growth at ZIRST.

This growth however has not been without its problems. Initially development was slow, leading to speculation as to whether the venture was too risky or would simply not attract the investment. In reality Grenoble's success means there is now little space for future development. Thus negotiations are taking place in an attempt to expand the Zone. The desired site for expansion is in the neighbouring commune of Montbonnet, but due to disagreement and rivalry between the two municipal councils, progress has been slow. Two other negative features have become apparent at Grenoble. Firstly, relatively little interchange appears to take place between the firms located on the site, thus questioning the need for such spatial concentration. Secondly, the many research-orientated firms of the ZIRST have not succeeded in producing a range of dependent manufacturing industries. Therefore, while the science park itself might be regarded as a success it has not acted as a stimulus for wider growth in the city's economy, and has not led to the

creation of a more extensive zone of activity within this part of the city. The reason for this could be that the municipal authorities have accorded inadequate priority to the ZIRST, as competition for investment from other locations within the city has shifted interest away from this zone. Also, for the firm's located on the ZIRST itself, there is the problem that the move from research organisation to production unit is often a difficult step to take, requiring a very different outlook for those involved. It is this challenge which faces the ZIRST in the future if its contribution to the city's economy is to be increased significantly.

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- 6 *ibid.*

CONCLUSION

Before the Second World War, the French provinces were generally poor, underdeveloped, sparsely populated and, on the whole, dependent on agriculture. Paris was the home of wealth, industry, power and over-crowding. Today, although there are still disparities within France; poor regions and richer regions, those which have developed and those which remain relatively underdeveloped; there has been a marked improvement. Much of the regional decision-making has been transferred to the local authorities, giving them the power to invest in, develop and help, those areas which are in need. This has not always been successful, but it has gone some way towards raising the voice of the regions in government, and highlighting problem areas more easily. Industrially, the policy of decentralization from Paris has meant that many firms have located elsewhere in France, and maybe the traditional assumption that industry locating in France must go to Paris, is slowly diminishing. However the problem remains that a large proportion of industry has set up within 200 km of Paris and those large companies which have ventured further afield, have a tendency to maintain their headquarters in the Capital.

The Rhône-Alpes region is considered to be one of the most highly-evolved regions in France, after Paris. The advances within the region in the field of science and technology have led to it being referred to as the "French Silicon Valley". Post-war development has largely been a success, although the West remains less developed and less affluent than the East. Lyon, in particular, has benefitted from the policy of decentralisation from Paris. She is now the site of several large and prestigious organisations, she is within easy reach of Paris, thanks to improved rail services and her newly-expanded commercial district of "La Part Dieu" has proved successful in attracting many new companies. Thus, as a Métropole d'équilibre, Lyon is fulfilling her role as an alternative to Paris. The Lyon-St.Etienne-Grenoble countermagnet metropolis has had mixed results. St.Etienne is a long way behind her two neighbours in terms of achievements and development since the War, which coincides with her position in the relatively less prosperous western half of the region. The proposed New Town of Méximieux was never built, thus the New Town, L'Isle d'Abeau, has been forced to develop in her own right rather than as part of a triangular scheme with Méximieux and Lyon.

Arguably one of the most important advances in the region must be the improved transport network. Because of the mountainous nature of the Rhône-Alpes, parts of the region were previously relatively isolated from the rest, which allowed for little interaction between some of the cities and towns. Today the rail and road network has vastly improved, many of the previously "isolated" towns are now doing well and the various parts of the region can pull together, helping each other to develop.

One of those previously "isolated" towns was Grenoble. Today she is within easy reach of the rest of her region, less than an hour from Lyon and has easy access to Europe. Grenoble is an integral part of the Rhône-Alpes region, and is considered to be the "star" of the "French Silicon Valley". However there can be no doubt that the depression of the late seventies and early eighties affected Grenoble a great deal and worried the local councillors and inhabitants. The possibility of a down-swing in the French economy was a major fear even at the height of the Grenoble "boom" in the sixties and early seventies. Some economists were then talking of the possibility of saturation and the problems that would arise if the population and employment rates were to fall, given that the infrastructure had expanded very quickly and at great cost.

Grenoble has now recovered from the recession and is rapidly making her name as a centre for high technology. Although successful in this field, she is not expanding at

anything like the rate of her heyday; in her quest for scientific recognition the city has had a tendency to neglect the manufacturing side of her economy, thus the fact that the research carried out by firms in the Science Park is not leading to new manufacturing industries, is quite a problem as the park has not yet succeeded in its secondary function of stimulating wider growth within the city's economy. However the University continues to attract top scientists which is attracting industry to replace those lost during the recession. Grenoble's town planning policy is now geared towards encouraging new industries to the area. Organisations such as B.I.E.N. (Bureau d'Implantation d'Entreprises Nouvelles) and C.O.V.E.G. (Conseil pour la Valorisation de l'Economie Grenobloise) have been set up in conjunction with the government regional planning programme, to offer advice and financial assistance to new firms wishing to establish themselves in the Grenoble agglomeration and multinational companies wishing to expand and benefit from the excellent research environment.

The Grenoble region represents a quarter of the exports of the Rhône-Alpes region, itself one of the biggest exporters in France. In order to encourage this the city has undertaken an ambitious International Policy. It is this that led to the idea, launched by the Mayor of Grenoble, Alain Carignon (also the Minister of the Environment), of an International Association for Cities of the Future. San Francisco, Pittsburgh, Phoenix, Montreal, Munich, Berlin, Vienna, Lausanne and many others have joined this club enthusiastically. Partners of such quality evidently says a lot for Grenoble.

Grenoble has certainly benefitted from the government's regional planning programme. The city possesses a superb modern infrastructure, developed for the 1968 Winter Olympic Games, for which the government paid three quarters of the cost. Transport links have improved considerably. There are now three airports nearby; at Grenoble, Lyon and Geneva; motorway links to Lyon, Geneva, Turin and, awaiting opening in the nineties, to Valence; and also a direct TGV route to Paris. Help concerning the yearly winter congestion in the area, owing to her proximity to a variety of ski stations, is currently under negotiation via the "special contracts" introduced by François Mitterrand. However, arguably the most important area in which the government helped the city's development, was simply by supporting, encouraging and believing in what Grenoble was trying to achieve. The government located research centres and scientific establishments in Grenoble, partly because of the policy of decentralisation from Paris, but also because it was prudent and economical to locate there. This is why the Science Park at Grenoble is one of the most successful in France, although there has been considerable government assistance behind this project. It is also the reason why France, and then Europe, chose Grenoble for the siting of the European Synchrotron Radiation Facility.

Grenoble is not, and never has been, a part of "le désert français". Her sense of innovation attracted industry and research of their own accord. Instead the government and Grenoble seem to have developed a form of mutually-beneficial partnership. Through regional planning and decentralisation from Paris, the government has accelerated the city's growth and transformed her into a highly-respected european scientific city. In return, Grenoble's prestige in her field reflects on France as a whole, leading to the siting of the Synchrotron in France; a major "coup", not just for Grenoble, but for the government and the country as well.

APPENDICES

THE CONTRACTUAL PLANNING SYSTEM.

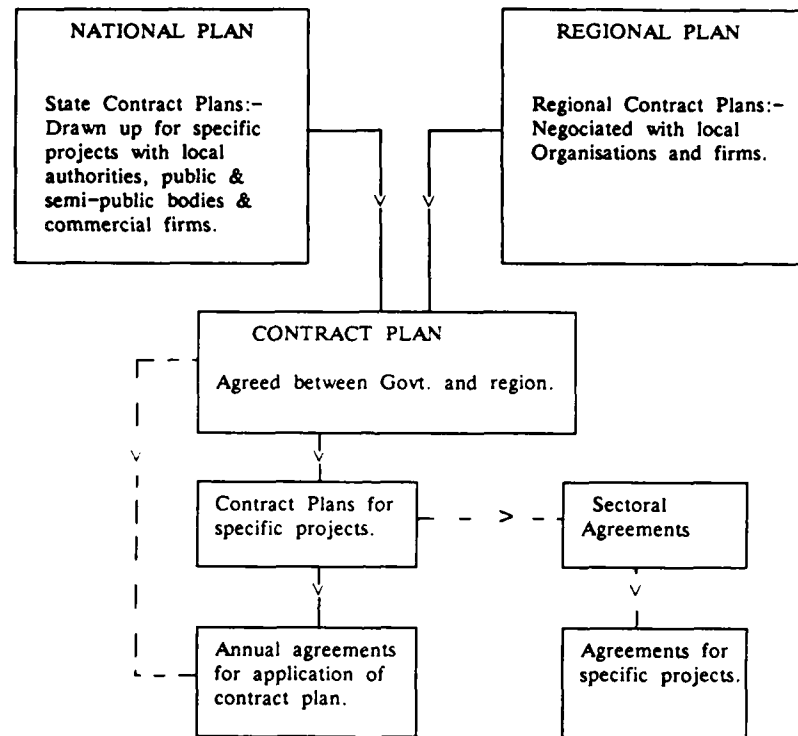


Fig.1 Source: Tuppen, J. France under Recession 1981-86 (1988)

GRENOBLE: CHANGES IN POPULATION AND EMPLOYMENT 1975-82.

(a) EMPLOYMENT

TOTAL			MEAN ANNUAL RATE OF CHANGE. (%).
	1975	1982	1975-82
INDUSTRY	67,365	57,456	-2.1
SERVICES	89,160	100,832	+1.9
TOTAL	157,365	158,288	+0.1

(b) POPULATION

TOTAL		MEAN ANNUAL RATE OF CHANGE 1975-82 (%).		
1975	1982	TOTAL	NATURAL	MIGRATION
387,353	390,849	+0.1	+0.9	-0.8

Fig.2 Source: Tuppen, J. France Under Recession 1981-86 (1988)

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<p>Abstract</p> <p>This dissertation is a study of French regional planning policies with specific reference to the Rhone-Alpes region. In particular it studies Grenoble and her science-based industries and research laboratories. It is critical analysis of the development of this region and of the factors behind its emergence as the French 'silicon valley'.</p> <p>Ever closer ties to Europe with increasing pressure for Anglo-French collaboration plus the impending impact of 1992 lead to the need for a closer awareness of French technical strategy and history. RSRE has significant links with the Grenoble area, and this memorandum has been made available to provide useful and relevant background.</p> <p style="text-align: right;">continued overleaf.....</p>				

Continuation to RSRE Memorandum 4282

Post-War Regional Planning - The French Silicon Valley

The memorandum was originally written as a dissertation forming part of a degree in European studies at Wolverhampton Polytechnic. The author spent a year at Grenoble University during 1987/88.